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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,476	07/27/2001	Tinku Acharya	42390P11959	1096

8791 7590 05/17/2006

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EXAMINER

SHERALI, ISHRAT I

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/917,476	ACHARYA, TINKU	
	Examiner	Art Unit	
	Sherali Ishrat	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments/Amendment

1. This action is in response to applicant's arguments filed on 3/3/2005.

Applicant's arguments are fully considered however they are not persuasive with respect to art rejection. See the remarks section for detail.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wise et al.(US 5,995,727) in view of Reisch et al. (US 5,168,375).

Regarding claim 1, 8 and 15, Wise discloses upscaling a decompressed image (Wise in col. 35, lines 17-20 states "all values are scaled upward by a scale factor of 2 for both DCT and IDCT operations". All values are scaled upward by a scale factor of 2 for both DCT and IDCT operations corresponds to upscaling decompressed image [IDCT]) comprising:

multiplying frequency domain coefficients for the decompressed image by a scale factor to achieved a desired amount of image upscaling (Wise in col. 35, lines 17-25 states "all values are scaled upward by a scale factor of 2 for both DCT and IDCT operations. In other words both $h(k)$ and $g(k)$ are multiplied by this scaling factor". This

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corresponds to multiplying frequency domain coefficients for the decompressed image by a scale factor to achieved a desired amount of image upscaling);

Wise however has not explicitly disclosed padding the frequency domain coefficients with sufficient zeros to provide the desired scaling).

However Wise discusses in the prior art that US Patent 5,168,375 to Reisch shows padding the frequency domain coefficients with sufficient zeros to provide the desired scaling (Wise in col. 3, lines 35-38).

Reisch disclose padding the frequency domain coefficients with sufficient zeros to provide the desired scaling (Reisch in col. 17, lines 16-25, Reisch states "The procedure for interpolation in accordance with the invention employs DCT array which is to be interpolated by insertion of additional row (s) and column (s) and padding additional row(s) and column(s) with zeros". This corresponds to padding the frequency domain coefficients with sufficient zeros to provide the desired scaling.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Reisch of padding the frequency domain coefficients with sufficient zeros to provide the desired scaling in the system of Wise by zero padding the DCT coefficient array shown by Wise in col. 35, lines 17-20 because such a process of interpolation provide additional sample point (pixels) without effecting the spectrum of the image for matching the image to the pixel array of a display as stated by Reisch in col. 3, lines 12-17.

Futhermore Wise discloses an article comprising storage medium [Claim 8] and system [claim 15] (Wise in Fig. 1 shows digital implementation of the Wise system

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which obviously include “an article comprising storage medium” [Claim 8] and “system” [claim 15] such as computer to implement the system of Wise.

Regarding claim 2, 9 and 16, Wise discloses frequency coefficients comprise DCT coefficients (Wise, col. 35, lines 17-20, frequency coefficients corresponds to DCT coefficients).

Regarding claim 3, 10 and 17, Wise discloses inverse transforming the scale coefficients (Wise col. 35, lines 17-20 Wise shows DCT and IDCT).

Reisch discloses inverse transforming the padded transform coefficients to provide a spatial domain image (See Reisch, figure 3, blocks 128 I and 134, Reisch shows inverse transform of DCT coefficients and padding additional rows of DCT with zeros).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Reisch of padding the frequency domain coefficients with sufficient zeros to provide the desired scaling in the system of Wise by zero padding the DCT coefficient array shown by Wise in col. 35, lines 17-20 because such a process of interpolation provide additional sample point (pixels) without effecting the spectrum of the image for matching the image to the pixel array of a display as stated by Reisch in col. 3, lines 12-17.

Regarding claims 4 and 11, Wise discloses scaling comprise integer scaling (Wise in col. 35, lines 17-25 states “all values are scaled upward by a scale factor of 2 for both DCT and IDCT operations. In other words both $h(k)$ and $g(k)$ are multiplied by this scaling factor”. This corresponds to scaling comprise integer scaling)

Regarding claims 5, 12 and 18, Wise discloses transforming the scaled frequency domain coefficients to provide a spatial domain image (Wise in col. 35 , lines 17-20 shows DCT and IDCT)

Reisch disclose inverse transforming the padded coefficients (Reisch figure 3, blocks 128 I and 134, Reisch shows transforming the padded frequency domain coefficients to provide a spatial domain image [block 134]).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Reisch of padding the frequency domain coefficients with sufficient zeros and to inverse transform to provide the desired scaling in the system of Wise by zero padding the DCT coefficient array and inverse transforming the zero padded coefficients shown by Wise in col. 35, lines 17-20 because such a process of interpolation provide additional sample point (pixels) without effecting the spectrum of the image for matching the image to the pixel array of a

Regarding claims 6, 13 and 19, Wise disclose decompressed image was decompressed from block based specification (Wise in col. 35, lines 17-20 shows DCT and IDCT which is based on block based specification because DCT is composed of blocks).

Regarding claims 7, 14 and 20, Wise discloses block based specification compliant compressed image comprise at least one of JPEG or MPEG specification compliant (Wise in col. 31, lines 30-35, shows block based specification [DCT] compliant compressed image comprise at least MPEG specification).

Remarks

4. In the applicant's response filed on 3/3/2006, Applicant argued the following:

a. Wise teaches upscaling of frequency coefficients followed by downscaling of those same coefficients so that no net image scaling occurs. Consequently, Wise fails to teach or suggest image upscaling. Thus, Applicant asserts that Wise fails to teach or suggest multiplying frequency domain coefficients for the decompressed image by a scale factor to achieve desired amount of image upscaling as recited in claim 1 and as required to support a prima facie rejection under 35 USC \S 103(a). Reisch also fails to teach or suggest these limitation.

Examiner disagree with Applicant's interpretation of Wise reference. Wise teaches upscaling of frequency coefficients followed by downscaling however independent claims 1, 8 and 15 are open ended claims because they recite "comprising". Wise in col. 35, lines 17-20 states "all values are scaled upward by a scale factor of 2 for both DCT and IDCT operations". All values are scaled upward by a scale factor of 2 for both DCT and IDCT operations corresponds to upscaling decompressed image [IDCT]). Furthermore Wise in col. 35, lines 17-25 states "all values are scaled upward by a scale factor of 2 for both DCT and IDCT operations. In other words both $h(k)$ and $g(k)$ are multiplied by this scaling factor". Both $h(k)$ and $g(k)$ are multiplied by this scaling factor corresponds to multiplying frequency domain coefficients for the decompressed image by a scale factor to achieved a desired amount of image upscaling.

b. Reisch does not teach padding the frequency domain coefficient with sufficient zeros to provide the desired scaling.

The primary reference to Wise has not explicitly disclosed padding the frequency domain coefficients with sufficient zeros to provide the desired scaling.

Wise discusses in the prior art that US Patent 5,168,375 to Reisch shows padding the frequency domain coefficients with sufficient zeros to provide the desired scaling (Wise in col. 3, lines 35-38).

In the same field endeavor of processing DCT and IDCT coefficients Reisch in col. 17, lines 16-25, states "The procedure for interpolation in accordance with the invention employs DCT array which is to be interpolated by insertion of additional row (s) and column (s) and padding additional row(s) and column(s) with zeros". DCT array which is to be interpolated by insertion of additional row (s) and column (s) and padding additional row(s) and column(s) with zeros" corresponds to padding the frequency domain coefficient with sufficient zeros to provide the desired scaling.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Reisch of padding the frequency domain coefficients of DCT/IDCT with sufficient zeros to provide the desired scaling in the system of Wise by zero padding the DCT coefficient array shown by Wise in col. 35, lines 17-20 because such a process of interpolation provide additional sample point (pixels) without effecting the spectrum of the image for matching the image to the pixel array of a display as stated by Reisch in col. 3, lines 12-17.

c. Combination of Wise with Reisch as asserted would render Wise's teachings unsatisfactory for its intended purpose and/or inoperable. Because Wise teaches upscaling followed by downscaling.

Examiner has stated above that claims are open ended claims. Examiner has not used the entire disclosure of Wise to reject the claims. Both Wise and Reisch are processing DCT/IDCT. Wise discloses multiplying frequency domain coefficients for the decompressed image by a scale factor to achieved a desired amount of image upscaling (Wise in col. 35, lines 17-25 states "all values are scaled upward by a scale factor of 2 for both DCT and IDCT operations. In other words both $h(k)$ and $g(k)$ are multiplied by this scaling factor". Both $h(k)$ and $g(k)$ are multiplied by this scaling factor corresponds to multiplying frequency domain coefficients for the decompressed image by a scale factor to achieved a desired amount of image upscaling).

Secondary reference to Reisch discloses padding the frequency domain coefficient with sufficient zeros to provide the desired scaling (Reisch in col. 17, lines 16-25, states "The procedure for interpolation in accordance with the invention employs DCT array which is to be interpolated by insertion of additional row (s) and column (s) and padding additional row(s) and column(s) with zeros". DCT array which is to be interpolated by insertion of additional row (s) and column (s) and padding additional row(s) and column(s) with zeros" corresponds to padding the frequency domain coefficient with sufficient zeros to provide the desired scaling.

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teaching of Reisch of padding the

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frequency domain coefficients of DCT/IDCT with sufficient zeros to provide the desired scaling in the system of Wise by zero padding the DCT coefficient array shown by Wise in col. 35, lines 17-20 because such a process of interpolation provide additional sample point (pixels) without effecting the spectrum of the image for matching the image to the pixel array of a display as stated by Reisch in col. 3, lines 12-17. Furthermore one having ordinary skill in the art could only upscale the frequency domain coefficients without downscaling.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

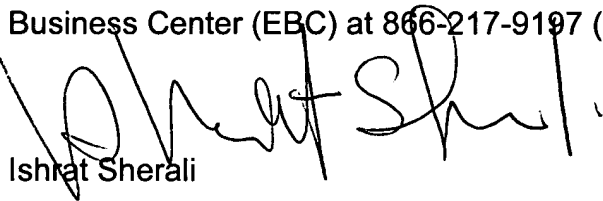
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherali Ishrat whose telephone number is 571-272-7398. The examiner can normally be reached on 8:00 AM - 4:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).



Ishrat Sherali

Patent Examiner

Group Art Unit 2624

May 10, 2005